

Interactive comment on “The detection of cloud free snow covered areas using AATSR measurements” by L. G. Istomina et al.

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"1. Line 22 on page 1102, instead of cite MODIS ATBD MOD-06 2002, more appropriate references are Ackerman, Steven A.; Strabala, Kathleen I.; Menzel, W. Paul; Frey, Richard A.; Moeller, Christopher C. and Gumley, Liam E.. Discriminating clear sky from clouds with MODIS. Journal of Geophysical Research, Volume 103, 1998, pp.32,141- 32,157. Liu, Yinghui; Key, Jeffrey R.; Frey, Richard A.; Ackerman, Steven A. And Menzel, W. Paul. Nighttime polar cloud detection with MODIS. Remote Sensing of Environment, Volume 92, 2004, pp.181-194. Call Number: Reprint # 3815"

We will correct this in the final version of the paper.

"2. Page 1103, line 21, TIR is not clear."

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Clarification will be added in the final version of the paper.

"3. I am wondering how the authors get the numbers in the text, e.g. Line 19-23 on Page 1110."

Our literature study was focused on models and measurements of snow spectral behavior depending on various physical parameters such as grain size, impurities, liquid water content, etc. in visible, near-infrared and thermal regions of spectrum. We analysed variabilities of snow spectrum discussed in the literature and brought them together as the relative thresholds presented in the manuscript, as well as the result of our own radiative transfer modeling. Showing all the possible snow spectra from studied literature as figures would drastically overload the manuscript, therefore we tried to give these details in the text and took care to mention all the references.

So, our spectral shape criteria have a physical reason underneath them (as opposed to manually set thresholds, where the only reason and control criterion is the subjective quality of the result). The fact that they are presented as relative thresholds is a consequence of low spectral resolution of AATSR. Another instruments with higher spectral resolution could provide enough information to analyse the spectral shape of the scene at a higher level, e.g. by watching the derivatives of the spectral function or by wavelet analysis, but even then the spectral shape idea presented in the manuscript remains valid.

"4. On figure 8-15, the authors might want to indicate clearly in the text there is difference in AATSR mask (clear snow mask) and MODIS mask."

Indeed this would clarify the figures, this will be added in the final version of the paper.

The authors are grateful for the useful suggestions on improving the manuscript.

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 1099, 2010.

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